A PERFORMANCE STUDY FOR THE UNIVERSITIES FOUNDED BEFORE 1973, TURKEY

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ABSTRACT

In Turkey the nine universities were established up-to 1973 after the first contemporary university of country, namely Daru'l Fünun was diminished in 1933. The performance of these higher education organizations, which are classified as "A-Categorized University" in some documents, was evaluated by the Ranking System on Academic Performance which was developed for the country's special conditions as based on different criteria. This paper mentions the main principles of this performance system and summarizes the study which was made for the performance of selected universities throughout country. This study includes the nine universities (Ankara, Atatürk, Boğaziçi, Ege, Hacettepe, İstanbul, İstanbul Teknik, Karadeniz Teknik ve Orta Doğu Teknik), which were founded between 1933 and 1972. In this study, data belonging to the period of 2010 and 2014 have been considered for the related universities. The system depends on education income, education structure, education quality, number of publications and projects, the index for Entrepreneurial and Innovative University and student satisfaction. The aim is to provide a comparative study on academic performance with well-balanced and justice decision for the related universities. This study indicates that there are so many parameters acting on the performance of universities, however the enlargement rate, localization and degradation on management system are dominant.

Keywords: Academic performance, education, higher education, ranking system, university.

INTRODUCTION

In general performance appraisal can be classified into two groups as traditional and modern methods (Aggarwal and Thakur, 2013). Traditional methods are older methods for performance appraisal which concentrated only on the past performance. There are the topical traditional methods used in the past: (1) Ranking method, (2) Graphical Rating Scales, (3) Critical Incident Method and (4) Narrative Essay Method. Modern Methods were introduced to improve the conventional methods. They consider the shortcomings of the old methods such as biasness and subjectivity. The typical modern method are generally categorized into six groups: (1) Management by Objectives (MBO), (2) Behaviorally Anchored Rating Scales (BARS), (3) Humans Resource Accounting (HRA), (4) Assessment Centre, (5) 360 Degree and (6) 720 Degree. In addition to traditional and modern methods mentioned above there are some various fuzzy hybrid techniques to execute performance appraisal for individuals or organizations (Laarheven and Pedrycz, 1983).

Currently, there are some ranking systems for the world universities based on academic performances, which determined by quality and quantity of scholarly publications. These methods, which have been implemented since the first half of 2000's years, adapted to an important criteria for questioning position of universities with time. Times and QS in United Kingdom, ARWU-Jiao Tong in China, Leiden in Nederland and SCImago in Spain are some of the evaluation systems that are internationally renowned. These systems are based on reliable sources such as Scopus, Web of Science and Google Scholar. In Turkey, URAP (University Ranking by Academic Performance) ranking system developed by Middle East Technical University globally measures universities according to academic performance (URAP, 2013).

This paper, summarizes the main principles of the specific method suggested for evaluating the universities in Turkey and introduces the result of a study, which was executed on performance of older nine universities of Turkey by means of a specific assessment model recommended for higher education system. The model based on methods of ranking and graphical rating scales. It includes the studies, which were done along twelve years (Tosun, 2004, 2006, 2011, 2015, 2016 and 2017).

MODEL PRINCIPLES

In the context of this study an assessment technique, which depends to six separate parameters, was used. The parameters of this specific assessment technique are teaching income, teaching structure, teaching quality, number of publications and projects, the index for entrepreneurial and innovative university and student satisfaction. The technique provides data for well-balanced and justice decision for universities in Turkey. Summation of scores belonging to each parameter gives total score for the related university to obtain its place in the ranking system of Higher Education in the country. In addition to this the technique also provides a ranking for each parameter (Tosun, 2015). It has been developed for only state universities in Turkey.

Summation of scores belonging to each parameter gives total score for the related university to obtain its place in the ranking system of Higher Education, Turkey (Equation 1). The evaluation was based on a total score of 1000 and the score for each parameter is given below.

$$TPS = TIS + TSS + AQS + PES + PYS + EIPS .... 1$$

in which;

TPS = Total Performance Score (1000 points) TIS = Teaching Income Score (100 points) TSS = Teaching Structure Score (100 points) AQS = Academic Quality Score (200 points) PES = Publication Efficiency Score (250 points) PYS = Project Yield Score (250 points)
EIPS = Entrepreneur-Innovation and Preference Score (100 points).

In addition to this, the technique also ranks state universities for each parameters (Tosun, 2015). The technique provides data for well-balanced and justice decision for universities in Turkey. It has been developed for only the state universities throughout country.

DATA FOR UNIVERSITIES

In this section, the human resources (numbers of faculty and student and administrative staff) of nine state universities considered for this study are given in table 1 for average of 2010, 2011, 2012 and 2013 years. In the previous detailed study, the number of undergraduate, and graduate students were given separately for each university (Tosun, 2015). However, in this study, the evaluation was made taking into consideration the total number of students. The related values were taken from the information system of Council of Higher Education (YOK). As can be seen from Table 1, the highest number of students belongs to Istanbul University and then Ege University. Number of students for Ankara, Ataturk and Ege Universities range from 48 384 to 50 611. The lowest number of students belongs to Bogazici University. For this university, number of students for working period averages to 12 206.

Tosun (2015) evaluates number of faculty for four working years in detail. Number of professor, associate professor, assistant professor, lecturer, research assistant and expert have been given separately for each university in the related study. In this study, the number of faculty consisting of all of these is taken into account. For nine universities included in the context of this study, the total number of faculties ranges from 1 186 to 5 482 for average of four years (2010, 2011, 2012 and 2013). On average, the largest number of teaching staff (5 482) belongs to Istanbul University as being in number of students. The lowest number of teaching staff (1 186) belongs to Bogazici University (Table 1).

The staff in the university system in our country is appointed according to the Law No. 657 on the civil servants and not in accordance with the Law No. 2547 on Higher Education. In this study, total numbers of staff were taken into account for each university. This information was obtained from the Information System of YOK. However, the data for 2010 could not be reached. On average, the largest number of personnel (6 295) belongs to Istanbul University and the lowest number of administrative staff (962) belongs to Bogazici University. Istanbul University, which has the largest number of students and faculties, also has a high number of staff.

Table 1. Human sources of universities for average of four years

#	University	Established year	Province	Number of student	Number of faculty	Number of staff
1	Ankara	1946	Ankara	48 384	3 792	5 286
2	Atatürk	1957	Erzurum	49 748	2 341	2 024
3	Bogazici	1971	Istanbul	12 206	1 186	962
4	Ege	1955	Izmir	50 611	3 336	4 041
5	Hacettepe	1967	Ankara	35 004	3 795	5 978
6	Istanbul	1933	Istanbul	83 262	5 482	6 295
7	İstanbul Teknik	1944	Istanbul	27 578	2 288	1 319
8	Karadeniz Teknik	1955	Trabzon	46 776	2 068	1 888
9	Orta Dogu Teknik	1956	Ankara	25 845	2 600	1 777
Total				379 414	26 888	29 570

The unit values on publication, citation, patent, utility model and accredited project, entrepreneurship-innovation index and the preference rate for student satisfaction are considered as data of the universities to be used in determining the performance evaluation criteria. Relevant data from universities are presented in table 2. Scientific proficiency of faculties in universities are evaluated as based on publications. The total number of publications of nine universities considered in the study is 6 098 for average of four years (TUBITAK, 2013a). The highest number of publications in this area belongs to Istanbul and Hacettepe Universities. The lowest number of publications was for Bogazici and Karadeniz Teknik Universities (Table 2). The number of citations of the universities in the relevant years is also variable. Total citation number; as end of 2013, has consisted of 36 959 for four years.

Table 2. Data for evaluation criteria in 2010, 2011, 2012 ve 2013

#	University	Number of Publication	Number of Citation	Number of Patent	Number of Utility Model	Number of Accredited Project	Index for EIU **	Free quata (%) 2-year program	4-year program
1	Ankara	1 420	4 197	1	0	59	39.33	0.30	2.10
2	Atatürk	868	1 952	1	0	18	31.33	10.58	6.59
3	Bogazici	557	4 261	0	0	37	72.33	-	0.00
4	Ege	1 478	4 968	3	2	76	50.00	2.38	3.69
5	Hacettepe	1 770	4 328	4	1	62	53.33	2.17	1.73
6	Istanbul	2 053	4 712	1	2	32	33.33	0.00	1.10
7	ITU*	898	5 016	4	1	75	70.66	-	2.30
8	KTU*	631	1 563	0	0	23	35.00	6.21	5.53
9	ODTU*	1 179	5 962	5	1	90	84.00	0.00	4.56
Total		10 854	36 959	19	7	472	52.14	3.09***	3.06***

(*) ITU= Istanbul Teknik University KTU= Karadeniz Teknik University ODTU= Orta Dogu Teknik University
(**) Index for entrepreneur and innovative university (***) Average value

In this study, projects supported by two institutions with well-defined evaluation criteria were taken into consideration (BSTB, 2013 and TUBITAK, 2013b). The total number of accredited projects in four years is 472 for nine universities averagely. Within this scope, the largest number of projects for four years belongs to Orta Dogu Teknik University with 90 projects and the lowest number of projects belongs to Ataturk University with 18 projects (table 2). The numbers for utility model and patent are very low during the working years. The total number of patents and utility models received by nine universities was 19 and 7 for four years, respectively. Orta Dogu Teknik University is leading due to total number of patent and utility model.

In Table 2, the values of EIU for nine universities participating in the study are averagely given for three years. All universities are included in the top 50 universities. However, scores change within a wide range. Orta Dogu, Bogazici and Istanbul Teknik Universities are leading while Ataturk, Istanbul and Karadeniz Teknik Universities are at the bottom of list due index for EIU.

For the preference rate in universities, an evaluation was made about the free quota for program that were filled and vacated in the first preferences of National Center on Student Selection and Placement (OSYM). For this purpose, free quota ratios for each university on the basis for undergraduate degree are given in table 2. Istanbul and Bogazici universities in two and four-year programs has been the most preferred university with the average rates of zero percent, respectively. Bogazici and Istanbul Teknik Universities have no two-years program.

RESULTS AND DISCUSSION

Table 3 introduces the scores in each evaluation parameter and the total country score for each of nine universities at this category. One of the most important results of this study is to use the related tables for self-questioning of universities. Figure 1 shows change on scores for each parameter and general situation.

Among the nine universities evaluated within the scope of this study, the highest scores in the field of scientific publications for four years are found in the universities of Orta Dogu Teknik and Bogazici, and the lowest scores belong to Karadeniz Teknik and Ataturk Universities (table 3). The average score of the universities based on the score of country was 196.56 for the field of scientific publication. Accordingly, four universities in this category are below average and five universities have scores above average value. Bogazici and Orta Dogu Teknik Universities have the highest scores in the field of entrepreneurship-innovation and preference while Karadeniz Teknik and Ataturk have the lowest scores. The average score in this field is 84.32, which is below the score of two universities and above the score of the other seven universities (table 3).

Table 3. The average values of parameter and total scores for nine universities.

#	University	Scientific Publication Score	EIPS*	Teaching Income Score	Academic Quality Score	Teaching Structure Score	Project Yield Score	Total Score
1	Ankara	196,44	86,27	76,86	176,34	85,66	142,25	763,84
2	Atatürk	157,22	64,61	51,25	112,91	81,08	120.40	587,44
3	Boğaziçi	225,00	98,97	89,95	164,50	85,05	138,08	801,56
4	Ege	209,07	85,93	69,51	146,91	77,32	189,22	777,84
4	Hacettepe	211,64	92,99	89,21	175,22	84,26	197,36	850.70
5	İstanbul	179,41	84,51	68,13	156,44	82,79	133,97	705,27
6	İstanbul Teknik	207,96	89,65	81,39	180,88	83,38	205.02	848,30
7	Karadeniz Teknik	150,36	70,68	33,43	99,73	71,34	92,57	518,15
8	Orta Doğu Teknik	231.98	90,73	83,79	178,28	88,60	192,73	864,89
	Average	196.56	84.32	71.50	154.58	82.16	156.84	746.44

(*) Entrepreneur-Innovation and Preference Score
(**) Average value on the relevant parameter for ten universities

The average score in the teaching income is 71.50. Bogazici and Hacettepe Universities, which are at top places of the list, has 89.95 and 89.21 points while Karadeniz Teknik and Ataturk Universities, which are below the average value have 33.43 and 51.25 points, respectively. In the field of teaching quality, universities offer values close to each other with expection of Karadeniz Teknik and Ataturk Universities. Istanbul Teknik University is at the top place while Karadeniz Teknik University is at bottom place. The average value of this field is 154.58, which is below the score of six universities and above the score of three universities.
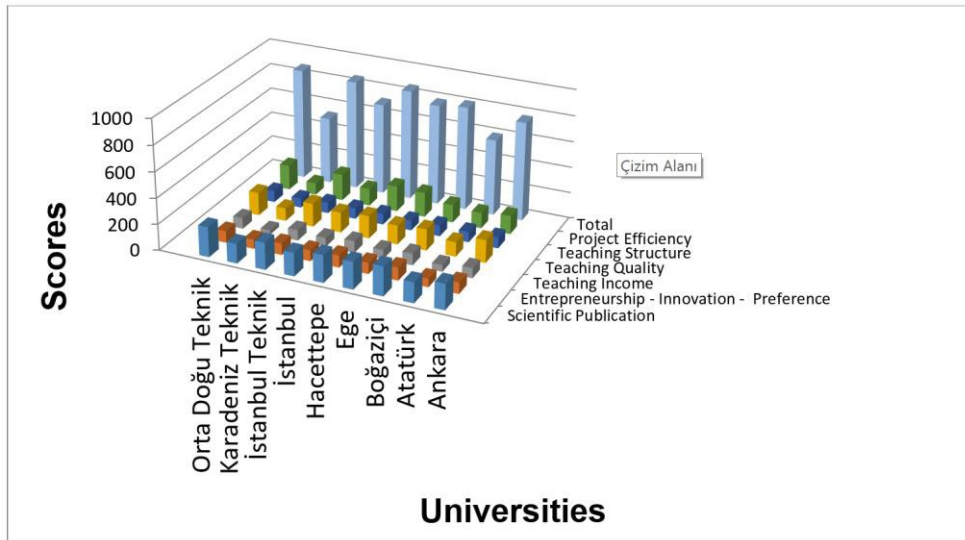
Figure 1. Change on scores for each parameter and general situation

In the field of teaching structure, score of Karadeniz Teknik and Orta Doğu Universities are 71.34 and 88.60 respectively. The score of other universities are among these two values. The average value in the relevant area is

82.16. Istanbul Teknik and Hacettepe universities are the most successful universities in project yield. These universities have 205.02 and 197.32 scores, respectively. The average score in this area was 156.84 (table 3).

The overall scores of the universities covered in this study range from 518.15 to 864.89. The lowest and highst scores belongs to the Karadeniz Teknik Orta Dogu Teknik Universities, respectively. Hacettepe and Istanbul Teknik Universities have relatively high and Ataturk and Istanbul Universities have relatively low scores. In this context, the four-years average ranking of each university in the country and category is presented in Table 4 for each parameter and general situation. In general, Orta Dogu Teknik, Istanbul Teknik and Hacettepe universities are ranked at first, second and third places, respectively. Bagazici, Ege and Ankara universities constitute the other orders respectively. The last three places from bottom to top are Karadeniz Teknik, Ataturk and Istanbul Universities.

Tablo 4**. Country and category rankings for each parameter and general situation.**

#	University	Scientific Publicatio n Score	EIPS**	Teachin g Income Score	Academic Quality Score	Teaching Structur e Score	Project Yield Score	Total Score
1	Ankara	13 (6)	11 (6)	16 (5)	6 (2)	3 (2)	20 (6)	8 (6)
2	Atatürk	31 (8)	32 (9)	51 (8)	46 (8)	11 (7)	29 (8)	26 (8)
3	Boğaziçi	2 (2)	1 (1)	4 (1)	10 (5)	3 (3)	21 (7)	5 (4)
4	Ege	5 (3)	11 (7)	27 (7)	23 (7)	15 (8)	7 (4)	6 (5)
5	Hacettepe	6 (4)	5 (2)	4 (2)	7 (3)	4 (4)	4 (1)	3 (3)
6	İstanbul	17 (7)	10 (5)	21 (6)	14 (6)	8 (5)	13 (5)	9 (7)
7	İstanbul Teknik	7 (5)	7 (3)	10 (4)	4 (1)	8 (6)	5 (2)	2 (2)
8	Karadeniz Teknik	36 (9)	27 (8)	68 (9)	54 (9)	24 (9)	39 (8)	34 (9)
9	Orta Doğu Teknik	1 (1)	7 (4)	9 (3)	7 (4)	1 (1)	6 (3)	1 (1)
Ortalama***		13	12	23	19	9	16	10

(*) Category ranking in parenthesis

(**) Entrepreneur-Innovation and Preference Score (***) Average of country ranking for each parameter

Orta Dogu Teknik University is the most productive university in the field of scientific publishing. This university is also leading in other fields especially on teaching quality. Bogazici university is ranked first in teaching income because of its low number of students and relatively high number of faculty. However its yield in other areas is relatively low. Ataturk and Karadeniz Teknik Universities have very low scores in all fields. Hacetepe University, which is in the first place in the field of project yield, has relatively low scores in other fields especially in terms of academic quality and scientific publication.

CONCLUSION

In Turkey, by the end of 2013, there were 103 state universities that have completed their foundation. Tosun (2015) performed a study for all universities In this study, the performance evaluation of nine universities, which founded before 1973, was carried out. Localization, massification, politicization and degradation in governance have been influential in the development of these universities, two of which were not established within the metropolitan area of country during their foundation. Localization has a very important influence on the development of Karadeniz Teknik and Ataturk University. These universities have grown rapidly considering local influences, and have not sufficiently taken into account the necessary criteria in their academic and scientific issues. Politization in the development of these universities was at least as effective as localization. In these universities there is the effect of degradation on governance which occasionally occurs in the formation of this situation. The Middle East Technical University, which was established in the same period, succeeded in achieving high performance with good management and intellectual understanding in accordance with universal principles.

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